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ABSTRACT

Problems in the application and misapplication of test scores are discussed. Tests have been used to achieve optimum use of resources rather than optimum development of the individual. Or, they have been used to predict a child's achievement rather than to identify his learning difficulties. This latter use would indicate when and where intervention in the child's educational experience might be successful in changing his predicted score. Predicted scores can also be changed by training individuals to take tests successfully. The use of test scores to measure abilities relevant to the skills required for a given occupation is considered. Finally, numerous suggestions are made which would aid counselors in fulfilling their responsibilities. These include providing the individual with information concerning agencies and organizations which could help him improve in areas where deficient, and with adequate and comprehensible data aiding him to make decisions that are correct for him, based on his values and goals and not merely on test scores and resulting predictions. The recent growth of vocational technical institutions provides an alternative to the pressures for conformity that result in so many students attending four-year colleges when they would prefer some other type of education. (PR)

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## PREDICTION AND GUIDANCE

by


***Benjamin Shimberg**


Psychological tests have long been a favorite target for criticism. Some people have focused their attacks on multiple-choice questions; others on the issue of invasion of privacy. Recently advocates of equal opportunity have been highly critical of the role tests play in excluding members of minority groups from jobs and training opportunities. Educators have been showing an increased concern about the impact of testing on instruction, and counselors have been asking whether they may not have placed too much reliance on test scores in guiding young people in their academic and vocational planning.

Such criticism and soul searching are long overdue. It is time that those who make and use tests took stock of the assumptions underlying the way in which tests are being used and of the possibilities for abuse. Testing needs to be placed into perspective. For what purpose can tests be used constructively? In which situations are they likely to be misused?

I would like to address myself specifically to the question of aptitude tests and our use of such tests in education and guidance. Such tests can make a significant contribution to educational development only if present practices are re-examined and modified.

Aptitude testing had its first large-scale application during World War I. The Army needed a fast and dependable way of choosing men who were ready learners; that is, soldiers who could be trained rather quickly to become officers or learn other specialized tasks. Just prior to World War I, the individual IQ test had been devised by

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Binet to help French educators identify mentally retarded school children. In the United States, Otis had made substantial progress in adapting Binet's individual IQ test for group administration. His work provided the basis for the well-known Army Alpha Test. It was effectively used during World War I in screening recruits. The success of the Army Alpha paved the way for the use of similar group tests by business and industry and by government, largely for employment purposes. However aptitude tests did not really catch on until after World War II. The publicity given to the role of tests in selection and placement of trainees by the military led to a great upsurge in the use of tests by civilian agencies, primarily for the purpose of predicting the likelihood of success on the job or in training situations. Although many guidance counselors in schools and colleges recognized the potential value of tests in guidance, resources were lacking to give this aspect of testing adequate emphasis.

This bit of historical background may help to explain why testing for selection and training has taken precedence over testing for other purposes, such as guidance. Personnel officers in the armed services are concerned primarily with fulfilling their military missions. They are not particularly concerned about the fate of those individuals who are *not* selected for training. In the military, potential trainees are plentiful; training resources, on the other hand, may be scarce. Therefore aptitude tests are used to identify those most likely to succeed in training. No great concern is shown for the further development of those not selected.

Screening programs in industry and elsewhere followed the military pattern. Tests were used to select those applicants who showed the greatest likelihood of success in training and on the job. This approach has been justified in terms of reducing the cost of training and costs associated with high turnover. As in the military, the personnel man showed little concern about the fate of those individuals who were not selected. That was someone else's problem.

A similar attitude has been adopted within certain segments of the educational community. Tests have been used effectively for screening students for college and for admitting students to specialized programs, such as law school and medical school. As in the military and in industry, those responsible for making optimum use of scarce training resources feel justified in picking the individuals who appear to have the greatest likelihood of success or, stated conversely, the smallest likelihood of failure. You will note that we spoke of the optimum use of resources. Nothing was said about the optimum development of the individual.

When aptitude tests moved into the schools, psychologists and guidance counselors were able to demonstrate that these tests were dependable predictors of academic success. You are all familiar with the pattern. The tests show that Jane, for instance, has scored low in verbal aptitude. Therefore, we can predict that she is likely to encounter difficulty in language arts. Ronnie has done poorly on a test of numerical ability. We say that he is likely to have difficulty in his mathematics courses. For such short-term predictions, aptitude tests have proved to be remarkably accurate. Bolstered by neatly tabulated correlation coefficients, many people in the testing business have taken a "Gee Whiz" attitude. "Look how good we are! We can predict what is going to happen two or three years hence." What many people seem to have lost sight of is that prediction is not an end in itself. In the military and industrial situation, the purpose of testing is to pick out the people who are most likely to succeed. But in the education area—especially in the instructional situation—prediction is not usually the main objective. Here there is less urgency and less need to make predictions or act in terms of long-range predictions.

If Ronnie has made low grades in his arithmetic courses or earned a low quantitative score on an aptitude test, we can be reasonably sure that he will have difficulty with his future math courses. He will probably earn low grades in them. That constitutes a prediction. This prediction is likely to come true unless there is intervention by a teacher who deliberately sets out to upset it. I sometimes feel that

upsetting predictions of this sort is one of the major functions of a teacher. Unfortunately, in too many schools the teachers and counselors have been content to see their predictions come true. Predictions become self-fulfilling prophesies.

Those who have worked with teachers know that one thing they seem to have learned well during their teacher-training period is that the IQ is innate and relatively unchangeable. Teachers seem to have learned these "facts" so well that they are hard to eradicate. When teachers have access to test records and see low IQ scores, many of them somehow feel absolved of responsibility for the child's intellectual development. It is no longer their fault if a nonachieving child has failed to learn.

But forget the IQ for a moment. Any aptitude score can have the same effect upon the teacher if the teacher uses it as an excuse. This is a misapplication of the prediction model in a situation where there is no need to use it. Many educators get carried away with the notion that the IQ as well as specific aptitudes are innate and not subject to modification. They lose sight of the fact that most so-called "scholastic aptitude tests" are nothing more than achievement measures. Examine any of the well known aptitude measures and you will find that the part called "verbal aptitude" is generally made up of vocabulary, verbal analogies, or reading comprehension items. These items test *learned* abilities. Another section may be made up of arithmetic computation items or arithmetic reasoning items. Such items are used to measure "numerical aptitude." Experience has shown that measures like these are closely associated with success in mathematics courses because they are really measuring past achievement in working with numbers. Naturally a child who does poorly on a test of this type lacks preparation in mathematics and will probably do poorly in his future mathematics courses.

This line of reasoning constitutes the major underpinning of aptitude testing. It is unfortunate that the notion of innateness of verbal and quantitative abilities has somehow spread throughout our entire educational system. We forget that predictions based on samples of previously learned behavior will hold up *only* if no one intervenes to modify the behavior. If someone works with the child to improve his skills, the predictions are likely to be upset. It is the intervention that changes the outcome.

John T. Dailey, of The George Washington University, has done some interesting work in the modification of certain specific aptitudes which seems to have broad implications for measurement. He has shown how uncritical we have been about so-called aptitude tests and has pointed out how our blind faith in the immutability of aptitude test scores has sometimes worked to the disadvantage of people, especially those in minority groups.

For years counselors have been using aptitude tests such as the General Aptitude Test Battery (GATB) and the Differential Aptitude Test Battery (DAT) for guidance and for admissions into vocational training programs. By and large, such batteries have worked fairly well for middle-class youngsters who had a common core of experiences. But they have not worked for, in fact they have worked against Negroes, Puerto Ricans, and others from disadvantaged backgrounds. Dr. Dailey noted that these youngsters tend to score poorly on tests of abstract reasoning, spatial visualization, and mechanical comprehension. He began to ask, "How much exposure do minority group youngsters have to materials involving problems of this type? How much of the variance in test performance is due to lack of familiarity, and how much is due to real differences in the individual?" He felt that it was important to get answers to these questions because tests of abstract reasoning, mechanical comprehension, and spatial visualization are frequently used in screening programs—especially for admission to vocational training.

Dr. Dailey asked himself, "Is it possible that some of these skills are trainable? Can we change a person's ability in an area like spatial perception or mechinical comprehension?" He began to experiment with

disadvantaged youngsters by offering them opportunities to practice in these areas. He used the Flanagan Aptitude Tests and similar tests as training materials. He gave the youngsters many opportunities to become familiar with problems of this type and showed them how to attack and solve the problems. In many instances their scores showed a marked increase with training. It soon became evident that much of the difference that had previously been found between the performance of minority groups and other groups was due to lack of familiarity. With practice, the variance due to this factor could be greatly reduced.

If Dr. Dailey's experience is valid and if it can be generalized, it may have important implications for the use of tests in guidance and selection. How often have counselors said to youngsters, "You made very low scores in spatial visualization. There is no sense in considering drafting or sheet-metal work as a career." How often have youngsters been excluded from training or apprenticeship programs because their test scores on certain aptitude tests fell short of some predetermined cut-off point? Evidently it never occurred to anyone that with a little coaching–explaining how to approach unfamiliar aptitude test problems–one could produce dramatic changes in test performances. Unwittingly, testers and guidance people may have done a disservice to members of disadvantaged groups. By accepting the assumption that certain aptitudes are innate and that tests are valid measures of these aptitudes, we have hurt the very people who needed our help most urgently.

Dr. Dailey's ideas are being used successfully in a number of social action programs designed to assist members of minority groups break through the testing barriers that have been used to deny them training opportunities. In New York City and elsewhere, the Workers Defense League has been giving refresher courses and remedial courses in reading, mathematics, and science to Blacks and Puerto Ricans. The League also has been teaching them how to take examinations. As a result, a substantial number of minority group youngsters are passing the apprenticeship tests for such skilled occupations as sheet-metal worker, iron-worker, and steamfitter. It remains to be seen whether passing the test hurdle actually opens the way to a successful training experience. If the screening tests were not valid in the first palce–that is, if they were used primarily as exclusionary devices–the ones who were coached for the examination may discover that they lack whatever qualities are really necessary for success in the trade. This opens a whole new topic: how does one identify skills critical to success in occupational training and measure them in a valid and meaningful way? For example, some people have opposed the use of verbal tests as discriminatory because they tend to exclude members of minority groups. But it would be foolish to abandon verbal material–simply because many of the disadvantaged are poor readers. If reading is essential to success in an apprenticeship training program, it is incumbent upon someone to find out the minimum level of reading ability that an applicant must have. Training programs must then strive to develop this skill in applicants. This should be done *not* so they can pass a screening test–but rather to ensure that they will read well enough to understand the textbooks and manuals used in training for the trade. If competency levels are established on the basis of a careful analysis of training materials and job requirements, I can see no objection to setting a critical cut-off score on a test of reading comprehension or any other basic skill that fairly and realistically reflects these requirements.

Sometimes we get carried away by the notion that the higher the test score, the better equipped the person is for training. However, scoring very high on a reading test would have little relevance as a determiner of success in certain occupations. As noted earlier, for many of the skilled trades a minimum amount of reading ability is needed. Beyond that point, possessing more of this ability may be of little consequence. For this reason, adding scores on several tests and selecting people on the basis of a total score may obscure some critical weaknesses. A very high verbal score will not compensate for a low mathematics score, if, in fact, mathematics is essential for success in training. On the other hand, there may be some attributes in which there is a direct relationship between

demonstrated ability and success in training. Research is needed to determine for which attributes the use of cut-off scores is adequate and for which the full range of scores will substantially improve predictive validity.

Screening apprentices for training programs may or may not be a primary concern of counselors who work in the twenty B'nai B'rith Vocational Service Field Offices. Nonetheless, the basic problems involved in guidance and selection for the skilled trades are not really that different from the problems encountered in guidance and selection for college. At the present time, due to certain social pressures, a great deal of attention is being focused on the testing practices used by apprentice screening committees. Similar attention has also been focused on testing practices used by employment offices in industry. In both cases much of the criticism has centered on the lack of a clear relationship between the tests used and the job to be done. Moreover, there is little or no evidence that the tests are related to success in training or to success on the job.

It is fair to ask, "Will the tests used by guidance counselors withstand similar scrutiny?" Presumably tests are administered to help clients make choices. Tests are considered useful since they provide an individual with dependable information about himself and about his chances of success in deciding on the various options that are open to him. The counselor endeavors to assist the client in identifying options and making predictions as to probable outcomes.

While using tests to help a client explore options, counselors often interpret the results as they believe an employer or college admissions officer might. They know that employers and admissions people frequently use tests to make predictions about applicants; so they try to anticipate their decisions. This introduces an element of realism. However, it is important to remember that there is a significant difference in the two situations. The employer or college admissions officer is concerned primarily with reducing attrition in his company or in his institution. He has no responsibility for the individual he turns away; perhaps not even for the one he accepts. Should he make a mistake, the applicant is the one who suffers the consequences.

Counselors, on the other hand, do have a responsibility for the client with whom they are working. They must be concerned about the quality of data they are using as a basis for making predictions. This prompts me to ask, "How dependable are your expectancy statements? How much do you really know about the relationship between various configurations of test scores and the chances of success in various educational and vocational programs?" Too many counselors use published norms uncritically, without stopping to consider whether these norms have any relevance for a specific client faced with a specific educational or vocational decision. A client is not really comparing himself with all 12th graders or with all boys admitted to four-year colleges. He is concerned about specific colleges—or specific training programs offered in specific institutions. What can you tell him about these institutions? Unless you have developed expectancy tables based on students who have attended these institutions, you may be providing information that could be grossly misleading as far as decision-making is concerned.

It appears to me that a nationwide organization such as the B'nai B'rith Vocational Service enjoys the unique opportunity to conduct follow-up studies of its counselees, and to pool data from all of its BBVS offices. At some point in time it can develop expectancy tables that provide a solid basis for advising students regarding their chances of success as they consider the various alternatives. A student has the right to know whether a person with his pattern of interests and abilities has a 90% chance of success in a particular program—a 50-50 chance or only a 20% chance of success. The individual should have the right to decide how much risk he is willing to take. It is his perogative to gamble for high stakes if he is motivated to do so. But he ought to be aware of the true odds. How can a client use test results, course grades, and other data in decision-making unless he knows what these data mean in terms of the alternatives he has under consideration? In the absence of such information, the counselor is often

forced to rely on general norms, on conventional wisdom, or on his own experience. Perhaps none of these is valid in a specific situation. When we attempt to gloss over the lack of backup data in our interpretation of test results, we open ourselves to the type of criticism that has been leveled at other groups. Judgments—when they come—will not add to the luster of our profession. What will bring luster to guidance are the things we do to assist the individual to understand himself better—such as the activities we undertake to foster an individual's career development and the insights we provide which motivate him to accept responsibility for his career decisions.

Although as counselors you use many of the tools of the admissions dean and employment officer, your role is more like that of an advisor-teacher. Your responsibility is to the individual rather than to the institution you serve. As pointed out earlier, the typical prediction tester is seldom concerned about individuals. This makes a very significant difference. As counselors you are striving to bring about an individual's fulfillment of his goals and it is not sufficient to say, "You are qualified for this, but not for that." Suppose the client is especially interested in a field for which the prognosis is unfavorable. Do you let it go at that, or do you explore ways in which the prognosis might be modified? If you see yourself in an advisor-teacher role, you will be concerned with upsetting actuarial predictions and with assisting your client to overcome weaknesses that may hamper his full development.

Tests can be useful diagnostic tools, but too few counselors use them in this way. Among those who do, there is frequently the feeling that they have fulfilled their responsibility when they have pointed out a client's strengths and weaknesses and discussed the implications that these may have for career planning. Such discussions may leave the client in a quandary. More often than not, he already knows he is weak in certain areas. In all likelihood he has previously tried, without much success, to get help from his teachers. Consequently, there is not much point in suggesting that he retrace a route he has already taken in the hope that this time the result will be different. New approaches need to be explored. This requires that the counselor have first-hand knowledge about professionally qualified individuals and organizations in his community to whom clients can be referred. Making suggestions of this nature always involves some risks. These can be minimized for the counselor as well as for the client by making careful inquiries from dependable sources and from former clients. I have known counselors who recommend expensive speed-reading programs and high-priced coaching schools for the Scholastic Aptitude Test. They have not taken the time to find out how they operate, the qualifications of the staff, or what the end-results are. Have you ever tried to find out how many of your clients who have taken speed-reading courses have continued to use the technique after they finished the course?

Coaching schools for the SAT examinations have become big business. Studies by the College Board have repeatedly discounted the extravagant claims made by the promoters. Two years ago the American Personnel and Guidance Association cautioned counselors about the value of such programs. Yet many counselors continue to encourage students to enroll in coaching programs on the dubious grounds that "it might do them some good" or that "it can't possibly do any harm." What these counselors overlook is the benefits students might derive from an alternative course of action. Should mathematics be the problem, the same amount of time and money spent on individual tutoring might yield results of a more lasting value to the student. Preparing for the SAT examinations is not just a matter of learning some computational tricks and practicing with SAT-type items. The candidate who has been having difficulties and feels anxious about mathematics needs to gain a better understanding of certain fundamental concepts and operations. If a coaching program provided this understanding, it would have real educational value. More often it is little more than a rapid review that attempts to be all things to all people. The individual with "hang-ups" in mathematics or in the verbal area needs more than a few tricks and practice to carry him over the hump. A good tutor can frequently zero in on the weaknesses that are the sources of difficulty. He can tailor

remedial work toward overcoming these specific difficulties. The counselor who shunts his clients to a commerically oriented coaching school, may, in fact, be doing them a disservice.

There are times when counselors could suggest effective self-study approaches which for some reason are not being utilized by classroom teachers. For example, some of you may wish to investigate an inexpensive self-study program developed by two members of the Educational Testing Service Research Division, Dr. Paul Diederich and Mrs. Sydell Carlton. Their program is called *Vocabulary for College* and is published by Harcourt, Brace, and World. It is not a "cram" course for the SAT, but rather a fundamental approach to developing a knowledge of words and shades of meaning. The student who uses such material will be better prepared for the reading and writing he will encounter in college. In the process of strengthening his verbal skills, he will also be better prepared for the verbal material he is likely to find on the SAT.

The use of tests in guidance—even when the results are tempered by the judgment and skill of the counselor—provides only part of the information and understanding needed by a client to make an educational or vocational decision. What about values? These are the real determiners in the decision-making process. When we test for various abilities, we gain some clues as to what an individual *can* do. When we measure interests, we get an idea of the kinds of things he might *like* to do. However, only if we know something about an individual's values can we help him decide what things are *worth doing.* What is he going to do with his life? How is he going to use his abilities? Some of his interests and abilities will be satisfied avocationally; others will be fulfilled vocationally. The degree of vocational satisfaction will be directly proportional to the degree of congruence among three factors—abilities, interest, and values. Values are particularly important to BBVS, whose professional thrusts rest on a particular base of values, identity and heritage.

Providing opportunities to explore and clarify values is potentially one of the most fruitful ways in which B'nai B'rith Vocational Service can use counseling services. You can give a client a great deal of information about himself, about careers, about jobs, and about colleges; but you will fail in assisting him to make decisions that are correct *for him* unless you also help him to explore his values and life goals. The counselor must constantly be on guard against assuming that he is aware of the values held by his client, just as he must guard against imposing his own values on the client. Unfortunately, no good measure of values exist. Group discussions led by a sensitive human being, followed by individual counseling, represent probably the best method known to get at values at the present time. Exploring our own values and clarifying our own roles are also necessary. Are counselors agents of society, subtly seeking to facilitate socialization, to encourage conformity to middle-class values, and in your case, to Jewish values? Or are they professionals ready to assist youngsters realize their full potential even if this may run counter to the expectations of parents and other agents of conformity? If the client is rebelling against the values of his parents or even those of his social or religious group, he needs understanding and acceptance as a person while he works through his problem. The minute the counselor is perceived by the client as an agent of society exerting pressure toward conformity, his effectiveness with that client is likely to be severely diminished. He is now no different from the client's parents, relatives, and teachers who have been keeping him in line all these years.

One indicator of the pressures for conformity is the high proportion of young people, especially Jewish youth, who are channeled into liberal arts colleges through the sheer momentum of everyone's expectations. Don't any of these youngsters ever say to you that they don't really "dig this academic stuff"... like history, French, and trigonometry? Don't they ever tell you that they get great satisfaction out of working with their hands, building things, creating, figuring how things work, solving practical problems? Don't they ever say that they enjoy being with people, helping, serving, solving human problems? What do you do with such youngsters? The fact that over 90% of your clients go

on to college suggests that there is probably a strong pro college bias among counselors and parents. This prompts me to ask, "To what extent do we really allow these youngsters to know and explore other alternatives, especially programs that do not have a four-year college orientation? Do the youngsters know about opportunities offered by technical institutes and by the occupationally-oriented programs in community colleges? For that matter, how many counselors have visited institutions offering various types of vocational and technical training? Perhaps if counselors were to expose themselves to such experiences, they might change some of their attitudes toward vocational education. It is an exciting experience to visit a good vocational or technical school and to see youngsters deeply engrossed in activities that are intrinsically interesting. This is a happy situation. What they are studying has relevance. They have the opportunity to integrate theory and practice. They are acquiring skills and developing a sense of self-worth and competence. If more counselors could understand the satisfactions and rewards that may be derived from vocational and technical programs, they would urge more of their clients to at least consider this type of education.

Speaking realistically, I don't think that too many counselors in academically-oriented secondary schools or in B'nai B'rith Vocational Service offices have the freedom to encourage youngsters to explore vocational-technical education. First of all they are prisoners of their own biases and middle-class values which place an inordinately high premium on the four-year college. Even when they are sufficiently liberated to recognize that not everyone will benefit from four-years of college exposure, they recognize that parents frequently have college ambitions for their children. To suggest a vocational program to a youngster is often to invite the wrath of his parents. Many parents would feel personally affronted if anyone dared suggest a vocational program to their progeny.

The emergence of many excellent occupationally-oriented programs in community colleges and post secondary area vocational-technical institutions provides the counselor with a fresh opportunity to encourage the exploration of subprofessional careers in engineering, medicine, business, and a variety of public health service occupations. Many of these programs—computer technology and oceanography, to mention only two examples—carry considerable glamour and prestige. The conditions are very favorable to public acceptance. Counselors need to learn directly from the institution about these programs. They must acquire the same degree of expertise with entrance requirements, course options, and lines of progression that they now possess with respect to programs in the four-year colleges. Counselors will not gain such expertise from studying the catalogs. They will need to visit the institutions, see the facilities, become acquainted with the instructors, and check with students concerning problems and satisfactions they derive from various programs of study. Only then will counselors be able to communicate meaningfully regarding the options available to youngsters who are currently propelled into four-year colleges because no acceptable alternatives are visible. Counselors need to understand how technician training differs from the typical engineering curriculum and why the former may be a better choice for a given student. The counselor needs to know whether it is realistic to suggest that a student may be able to move easily from a technician program into a full fledged degree program. He'd better be sure of his ground before he attempts to answer such inquiries. Misinformation about such matters could have serious repercussions for the student's future.

Although we have been talking primarily about students making the transition from the secondary school to some type of post secondary educational experience, we should recognize that in the years ahead counselors will be called upon increasingly to assist adults in making vocational adjustments. If predictions emanating from the U.S. Department of Labor are to be believed, a person entering the labor force at the present time is likely to change his occupation three or four times during his working life. He will have to weigh alternatives, make choices, and formulate fresh strategies to maintain his occupational momentum. Counselors will play an important role in guidance from the elementary grades through the entire working-life cycle and into the retirement years. We will probably see many innovations that may radically change the counselor's job. I believe that it is going to be an exciting period, one where people from B'nai B'rith Vocational Service will have many opportunities to exercise creative leadership and blaze new trails for youth in the future as they have in the past.